

# Fundamental Cisco Training for Collaboration Engineers

This fundamental Cisco collaboration training prepares learners for job tasks specific to collaboration engineers. Use this course as a learning resource if you're thinking about getting CCNP certified within Cisco's Collaboration track. This Cisco Collaboration prep course covers the foundations of collaboration solutions, and a practical understanding of how to implement and configure Cisco network tools and equipment, all from the perspective of collaboration engineers who focus on voice capacity.

[CBT Nuggets course material](#) →

## WEEK 1

### VoIP and the Differences Between Analog and Digital Signaling 157 min.

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| Intro: VoIP and the differences between analog and digital signaling | 1  |
| Welcome  | 11 |
| About Cisco Certifications   | 7  |
| The impact of VoIP today   | 13 |
| Describe analog signaling  | 13 |
| Describe digital signaling   | 5  |

### Cisco Collaboration Components

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| Connecting to the PSTN                | 10 |
| Cisco Collaboration Components        | 6  |
| The different UC Deployment Models    | 9  |
| On-Premises UC Deployment Models      | 6  |
| Cisco Unified Communications Manager  | 8  |

### Cisco Collaboration Hardware

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| Server Hardware Options             | 11 |
| Integrated Services Routers         | 10 |
| Collaboration Endpoints             | 13 |

## Voice Protocols, Codecs and Digital Signal Processors

|  |    |
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| Voice Signaling Protocols                                    | 10 |

### WEEK 2

153 min.

|                           |    |
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| Voice Streaming Protocols | 5  |
| Voice CODECs              | 8  |
| Digital Signal Processors | 9  |
| Power Over Ethernet       | 15 |

## Network Services and Features

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| Intro: Network services and features | 1  |
| VLANs                                | 11 |
| Voice VLANs                          | 5  |
| DHCP                                 | 11 |
| DNS                                  | 5  |
| NTP                                  | 6  |
| CDP                                  | 4  |
| TFTP                                 | 2  |

## Quality of Service Requirements, Models, and Markings

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| Supplemental File                                    | 1 |
| Intro: Quality of Service Needs, Models and Markings | 1 |

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| Why do we need Quality of Service?               | 9  |
| Knowing the enemy of your VoIP traffic           | 10 |
| Identify the types of traffic that are important | 5  |
| QoS Models                                       | 5  |
| Class of Service                                 | 4  |
| IP Precedence                                    | 3  |
| Differentiated Services Code Point               | 16 |

## Quality of Service Tools and Algorithms

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| QoS Tools - Congestion Management              | 5 |
| QoS Tools - Congestion Avoidance               | 5 |

### WEEK 3

156 min.

|  |    |
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| QoS Tools - Policing and Shaping                       | 4  |
| Link Efficiency  | 5  |
| Queuing Algorithms – FIFO                              | 5  |
| Queuing Algorithms - Weighted Fair Queuing             | 4  |
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| Queuing Algorithms - Low Latency Queuing               | 3  |
| Low Latency Queuing Example                            | 11 |

## Introduction to CUCM

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| CUCM Services                     | 10 |
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### CUCM Endpoint Registration

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| CUCM Clusters                     | 9  |
| Adding a CUCM Subscriber          | 8  |
| Phone boot process                | 6  |
| Manual Phone Registration         | 10 |
| CUCM Auto-Registration            | 8  |
| What if DNS is down?              | 5  |

### Collecting Packet Captures and Troubleshooting Endpoint Registration

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| Supplemental File  | 1 |
| Intro: Collecting packets captures and troubleshooting endpoint registration | 1 |
| Collecting a packet capture from a Cisco IP Phone                            | 9 |
| Auto-Registration Packet Capture   | 2 |
| SIP Registration Messages  | 6 |

## WEEK 4

**153 min.**

|   |    |
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| Inspecting the phone configuration file | 7  |
| Troubleshoot Phone Registration         | 11 |
| Customize phone wallpaper               | 11 |
| Customize phone ringtones               | 10 |

|                                  |   |
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| Reset vs Restart vs Apply Config | 4 |
|----------------------------------|---|

### CUCM Device Pools

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| Intro: CUCM Device Pools | 1  |
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| Date/Time Groups         | 8  |
| Phone NTP reference      | 6  |
| Regions                  | 15 |
| Locations                | 13 |

### CUCM Templates and Profiles

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| Intro: CUCM Device Pools                     | 1  |
| Device Defaults Configuration                | 7  |
| Installing endpoint firmware manually        | 12 |
| Installing endpoint firmware with a COP file | 12 |
| Softkey Templates                            | 7  |
| Phone Button Templates                       | 7  |

## WEEK 5

**152 min.**

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### CUCM Bulk Administration Tool

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| Intro: CUCM Bulk Administration Tool | 1  |
| Bulk Administration Tool - bat.xlt   | 15 |

|  |    |
|--|----|
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| Bulk Administration Tool - Insert phones   | 15 |
| Bulk Administration Tool - Update Phones   | 7  |
| Phone Copy vs Super Copy                   | 5  |
| Migrate Phone                              | 6  |

### Manage CUCM User accounts

|                                    |    |
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| Managing Local End Users in CUCM   | 8  |
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| LDAP Synchronization               | 13 |
| LDAP filters                       | 6  |
| When LDAP users are deleted        | 3  |
| LDAP Authentication                | 7  |

### CUCM User and Group Management

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**163 min.**

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| Access Control Groups | 9 |
| User Rank             | 5 |
| Self-Care Portal      | 9 |

### CUCM Directory Numbers

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| Directory Numbers                       | 7  |
| Shared Lines                            | 11 |
| Directory Number Settings               | 14 |
| Call Forward and Call Pick Up settings  | 7  |
| Music On Hold                           | 8  |
| Route Plan Report                       | 3  |
| Find Unassigned Numbers                 | 5  |

### CUCM Dial Plans and Route Patterns

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| Intro: CUCM Dial Plans and Route Patterns | 1  |
| Our Network                               | 2  |
| Dial Plan                                 | 5  |
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| Route Pattern Wildcards                   | 10 |
| Creating our Dial Plan                    | 10 |
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## WEEK 7

152 min.

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| Local Route Groups   | 6  |

### CUCM Partitions and Calling Search Spaces

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| Calling Search Spaces                       | 6  |
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| Calling Search Spaces Implementation        | 13 |
| Device vs Line CSS                          | 7  |
| Device and Line CSS Implementation          | 3  |

### CUCM Translation Patterns

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| Overview  | 1  |
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| Translation Patterns  | 4  |
| Scenario 1: Route inbound calls from the ITSP                 | 8  |
| Scenario 2: Dial 0 to reach the operator                      | 8  |
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| Dialed Number Analyzer  | 7  |

## CUCM Media Resources

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| Intro: CUCM Media Resources | 1 |
| Types of Media Resources    | 8 |

## WEEK 8

153 min.

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| Media Resource Groups      | 11 |
| Media Resource Group Lists | 8  |
| Media Termination Points   | 11 |
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| Conference Bridges         | 7  |

### CUCM Hunt Pilots and Call Park

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| Hunt Pilots                           | 9  |
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| Call Park Monitoring                  | 11 |
| Directed Call Park                    | 3  |

### CUCM Common Endpoint Features

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| CUCM Common Phone Features | 1  |
| Call Forward All           | 12 |
| Meet-Me                    | 10 |
| Conference Now             | 9  |
| Busy Lamp Fields           | 7  |

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| Call Pickup | 16 |
| Intercom    | 7  |

## WEEK 9

### CUCM Reporting, Backups and the CLI

156 min.

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| Cisco Unified Reporting                    | 9  |
| Call Detail Records (CDRs)                 | 15 |
| Disaster Recovery System (DRS)             | 17 |
| Basic CLI commands                         | 11 |

### CUCM Real-Time Monitoring Tool

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| Intro: CUCM Real-Time Monitoring Tool  | 1  |
| Cisco Real-Time Monitoring Tool (RTMT) | 7  |
| Cisco RTMT Overview                    | 9  |
| Cisco RTMT Performance Counters        | 10 |
| Cisco RTMT Alert Central               | 10 |
| Downloading Files from RTMT            | 6  |
| Restarting/Shutdown servers            | 13 |

### Introduce Cisco Unity Connection

|                                  |    |
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| Introduce Cisco Unity Connection | 1  |
| Cisco Unity Connection           | 6  |
| CUC Admin Interfaces             | 5  |
| Integration between CUCM and CUC | 11 |
| CUC Clusters                     | 7  |

|                           |    |
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| CUC Voice Messaging Ports | 11 |
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## WEEK 10

158 min.

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| CUC System Settings | 4 |
|---------------------|---|

### Cisco Unity Connection User Accounts

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| Overview                                    | 1  |
| Intro: Cisco Unity Connection User Accounts | 2  |
| CUC End User Experience                     | 8  |
| Creating users manually                     | 6  |
| Importing users from CUCM                   | 5  |
| Importing users from LDAP                   | 10 |
| CUC LDAP authentication                     | 4  |
| CUC Roles                                   | 8  |

### Cisco Unity Connection Voicemail Account Settings

|  |    |
|--|----|
| Overview   | 1  |
| Supplemental File  | 1  |
| Intro: Cisco Unity Connection Voicemail Account Settings | 1  |
| How does CUCM route calls to voicemail?                  | 6  |
| Voicemail Account Default Settings                       | 14 |
| Mailbox Quotas   | 15 |
| CUC User Templates                                       | 7  |
| You have voicemail!                                      | 3  |

### Cisco Unity Connection Rules, Aging Policies and Notifications

|          |   |
|----------|---|
| Overview | 1 |
|----------|---|

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|---|----|
| Intro: Cisco Unity Connection Rules, Aging Policies and Notifications | 2  |
| Direct and Forwarded Routing Rules                                    | 7  |
| Authentication Rules  | 11 |
| Message Aging Policy  | 7  |
| CUC Notifications   | 11 |
| Types of Greetings  | 6  |

### Cisco Unity Connection Call Handlers

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| Intro: Cisco Unity Connection Call Handlers | 1  |
| System Call Handlers                        | 11 |

## WEEK 11

**154 min.**

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| Create a System Call Handler                   | 13 |
| Complete our System Call Handler configuration | 5  |
| Call Handler Options                           | 19 |
| Call Handler Owners                            | 6  |

### Cisco Unity Connection Partitions and Directory Handlers

|   |    |
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| Intro: Cisco Unity Connection Partitions and Directory Handlers | 1  |
| Partitions and Search Spaces                                    | 15 |
| Schedules   | 9  |
| Holiday Schedules   | 6  |
| Directory Handlers  | 15 |

### Class of Service, Interview Handlers, and Distribution Lists

|   |    |
|---|----|
| Overview  | 1  |
| Intro: Class of Service, Interview Handlers, and Distribution Lists | 1  |
| Class of Service  | 8  |
| Web Inbox   | 8  |
| Cisco Personal Communications Assistant                             | 10 |
| Interview Handlers  | 10 |
| Distribution Lists  | 15 |

### CUC Failover, Disaster Recovery and Reports

|   |   |
|---|---|
| Overview  | 1 |
| Intro: Class of Service, Interview Handlers, and Distribution Lists | 1 |
| Alternate Extensions & Names  | 6 |

## WEEK 12

**155 min.**

|                          |    |
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| CUC Cluster Failover     | 11 |
| Disaster Recovery System | 12 |
| CUC Reports              | 8  |
| CUC RTMT                 | 11 |
| Thank you!               | 8  |

### Creating our lab environment: Our topology, hardware, and base configuration

|   |   |
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| Benefits of a home lab  | 9 |

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| Lab Hardware                       | 7 |
| Our Lab Network                    | 5 |
| Routers and switches base config   | 9 |
| Setting up management connectivity | 8 |
| Create VLANs in our environment    | 4 |
| Test VLAN Connectivity             | 6 |

### **Creating our lab environment: Configure Router on a Stick and setup a DHCP/NTP server**

|  |    |
|--|----|
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| Supplemental File  | 1  |
| Intro: Creating our lab environment: Configure Router on a Stick and setup a DHCP/NTP server | 1  |
| Set up Router on a Stick   | 13 |
| Configure our lab switches   | 13 |
| Setup up our DHCP Server   | 8  |
| Setting up our NTP Server  | 5  |
| Saving and Exporting your configs  | 9  |

## **WEEK 13**

### **Creating our lab environment: Install and setup VMware ESXi 165 min.**

|                                    |    |
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| Overview                           | 1  |
| Supplemental File                  | 1  |
| Intro                              | 1  |
| ESXi Overview                      | 8  |
| Obtain the ESXi software           | 9  |
| Install ESXi                       | 10 |
| Setup ESXi Storage                 | 5  |
| ESXi vmnics and port configuration | 7  |

|                             |   |
|-----------------------------|---|
| Setup ESXi Virtual Switches | 3 |
| Setup ESXi Port Groups      | 5 |
| Test Connectivity           | 6 |

### **Creating our Lab Environment: Install and Set Up Windows Server**

|  |    |
|--|----|
| Overview   | 1  |
| Intro  | 1  |
| Download Windows Server Trial                            | 5  |
| Install Windows Server                                   | 5  |
| Install VMware Tools and create a snapshot of our server | 11 |
| Assign our hostname and IP address                       | 9  |
| Setup Active Directory                                   | 4  |
| Setup our DNS server                                     | 8  |
| Setup our Certificate Authority                          | 6  |
| Extending the Windows Server trial                       | 4  |

### **Creating our lab environment: Deploy CUCM Publisher and Subscriber Nodes**

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| Intro: Deploy CUCM Publisher and Subscriber | 1  |
| Gather the necessary files                  | 11 |
| Install the CUCM Publisher Node             | 17 |
| Activate CUCM services                      | 5  |
| Register phones to CUCM                     | 16 |

## **WEEK 14**

**159 min.**

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| Install the CUCM Subscriber Node          | 9 |
| Activate CUCM services on Subscriber Node | 6 |

### Creating our lab environment: Deploy CUC Publisher and Subscriber Nodes

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| Overview  | 1  |
| Supplemental File   | 1  |
| Creating our lab environment: Deploy CUC Publisher and Subscriber Nodes | 1  |
| Gather the necessary files  | 3  |
| Install the CUC Publisher Node  | 11 |
| CUC and CUCM SIP Integration  | 6  |
| CUCM Voicemail Configuration  | 5  |
| CUC Publisher Configuration   | 8  |
| Install the CUC Subscriber Node   | 8  |
| CUC Subscriber Configuration  | 7  |

### Creating our lab environment: Configure our CUBE and PSTN router

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| Intro: Configure our CUBE and PSTN router    | 2  |
| Our Game Plan                                | 5  |
| Cisco Unified Communications Manager Express | 5  |
| PSTN/ITSP Router Configuration               | 19 |
| CUBE Router Configuration                    | 12 |
| CUCM Configuration                           | 4  |
| Testing inbound and outbound calls           | 14 |

### Creating Our Lab Environment: Backup and Restore CUCM\CUC

|                                    |    |
|------------------------------------|----|
| Overview                           | 1  |
| Intro: Backup and Restore CUCM\CUC | 1  |
| The evaluation period expires!     | 3  |
| Perform backups of CUCM and CUC    | 10 |
| Revert CUCM to original snapshot   | 12 |

### WEEK 15

24 min.

|                                       |   |
|---------------------------------------|---|
| Restore CUCM from backup              | 6 |
| Bring the CUCM Subscriber back online | 8 |
| Revert CUC to original snapshot       | 7 |
| Final Words                           | 2 |